

Mendel's theory is preceded by a brief biographical note on its author. In this edition some of the newer developments, such as Bateson's "Presence and Absence Hypothesis," the newer conception of "reversion," and the phenomena of "dihybridism," supplanting the older conceptions of synthesis and the compound allelomorph, are included, bringing the treatment quite up to date. The statement of the general theory is clear and interesting, its practical bearings are indicated, and in a "Note" at the end directions are given for those who may wish to repeat Mendel's experiments. The seven diagrams are specially helpful.

It seems unfortunate that a work, otherwise so admirable, should be marred by a botanical morphology long since abandoned. Thus, on pages 16, 17, and 82, the stamens are referred to as the "male" and the pistil as the "female" organs of the flower. On page 19 the pollen-grain is described as a "minute male cell" and homologized with the spermatozoön of animals; and again, on page 20, the zygote is said to develop into the adult organism by "a process of repeated nuclear division," omitting cell-division entirely.

With the exception of these minor points, it seems difficult to imagine how the work could have been done much better. Teachers, especially, should welcome the book most heartily.

C. STUART GAGER.

PROCEEDINGS OF THE CLUB

OCTOBER 30, 1907

The meeting was held in the Museum Building of the New York Botanical Garden. The Club was called to order by the secretary at 3:55 o'clock, and Dr. John Hendley Barnhart was elected chairman. Twenty-two persons attended.

After the reading of the minutes for October 8, 1907, the following names were proposed for membership:

Mr. F. E. Fenno, Nichols, N. Y.; Mr. Morris Friedman, 2874 Briggs Ave., Bronx, N. Y. City; Miss Lillian Belle Sage, 34½ East 12th St., N. Y. City.

The question of omitting the regular meeting for November 27

(the day before Thanksgiving) was discussed, and a motion to omit that meeting was lost.

The resignation of Dr. William Austin Cannon was read and accepted, subject to the approval of the treasurer. On motion, the secretary cast the vote of the Club, electing to membership the persons proposed as above.

The following program was presented :

N. L. Britton : Botanical exploration in Jamaica.

Dr. Britton described his recent trip to the Island of Jamaica, where he with Mrs. Britton spent the month of September in exploring the south-central portion of Jamaica, in coöperation with Hon. William Fawcett, Director of Public Gardens and Plantations, and Mr. William Harris, Superintendent of Public Gardens. Collections aggregating about one thousand field numbers were made in the vicinity of Kingston, in the vicinity of Mandeville, on the Santa Cruz mountains and the Pedro plains lying between these mountains and the southern coast. The coast and morasses about Black River and Lacovia were examined ; and another base was made at New Market, on the western border of the parish of St. Elizabeth, whence the hill country of the vicinity and of Eastern Westmoreland were explored. A stop was made also at Bluefields on the southern coast.

The region explored had been little collected in since the visit of William Purdie, an English collector sent to Jamaica from the Royal Gardens, Kew, in 1843 and 1844 ; and many species not collected by Mr. Harris in his recent work were obtained. Specimens of a considerable number of the more interesting trees and shrubs obtained were exhibited.

P. A. Rydberg : Remarks on the Water-weed, *Philotria*.

The genus was first described in Michaux's Flora Boreali-Americana under the name *Elodea*. Unfortunately this is antedated by *Elodes* Adanson. *Elodea* is characterized as having hermaphrodite flowers with three stamens and three bifid styles. Muhlenberg, in his catalogue, referred the plant to the Old World *Serpicula verticillata* L., now *Hydrilla verticillata*, and characterized the plant as being dioecious with 4-merous staminate flowers. Pursh, in his Flora, retains the plant in *Serpicula*, but

publishes it under a new specific name, *S. occidentalis*. His description agrees in every respect with that of Michaux, except that the leaves are described as linear, acute, and finely serrulate. Rafinesque, in reviewing Pursh's Flora in the *American Monthly Magazine*, criticized Pursh's treatment of the plant and proposed a new name *Philotria*, under which the plant is now to be known. Nuttall, in his Genera, proposes another new name *Udora*, and cites *Elodea* Michx. as a synonym, but describes the plant as being dioecious, the staminate flowers as having nine stamens and the pistillate as having three sterile filaments and three ligulate bifid stigmas. He added also: "flowers very small and evanescent, the female emerging; the male migratory, breaking off connection usually with the parent plant, it instantly expands to the light, the anthers also burst with elasticity and the granular pollen vaguely floats upon the surface of the water." Torrey, in the Flora of New York, describes *Udora* as being polygamous, the sterile flowers with nine stamens, the fertile ones with three to six stamens and cuneiform two-lobed stigmas.

How are these conflicting descriptions to be reconciled? Have some of the authors mentioned given erroneous descriptions? Are there more than one species which have been confused, or is *Philotria canadensis* such a variable plant both as to flowers and leaves? If there are more than one species, are they all polygamo-dioecious with three kinds of flowers: staminate with very short perianth-tube and nine stamens, pistillate ones with long tube and no stamens or merely rudimentary filaments, and hermaphrodite flowers similar to the pistillate ones but somewhat larger and with three to six stamens? These are questions to be answered, and botanists who have an opportunity to study the plants are invited to make thorough field study on these interesting water-weeds.

The study, as far as it has been done now, has given the following suggestions and conclusions, drawn mostly from the literature on the subject and from herbarium material. There seem to be more than one species, probably six or seven. As far as the material on hand shows, the plant with broad and obtuse leaves, originally described as *Elodea canadensis*, seems to be

hermaphrodite ; the others all dioecious, not polygamous. The plant that is growing in Europe, supposed to have been introduced from America, and described as *Anacharis Alsinastrum* Babington, resembles *E. canadensis* in habit, but only pistillate flowers have been found, and in these the stigmas are entire. In the North American forms with dioecious flowers the staminate sheaths are sessile in the axils of the leaves and easily overlooked, except in the plant common in the Rocky Mountain region and one specimen from Tennessee, in which the sheaths are peduncled. In the Rocky Mountain plant the staminate flowers are apetalous.

The subject will be more fully discussed in a paper which Dr. Rydberg is preparing to publish in the *Bulletin* of the Club, as soon as more material has been consulted and certain questions can be answered more definitely.

Both papers were briefly discussed and adjournment was at 5:30 o'clock.

C. STUART GAGER,
Secretary.

NOVEMBER 12, 1907

The Club met at the American Museum of Natural History, November 12, 1907. The meeting was called to order by Dr. J. H. Barnhart. Dr. E. B. Southwick was elected chairman. In the absence of the secretary, Miss W. J. Robinson was elected secretary *pro tem.* Eleven persons were present.

After the minutes of the previous meeting were read and approved, the name of Mr. Bertram F. Butler was presented for membership.

The resignation of Dr. W. A. Bastedo was read and accepted, subject to the approval of the treasurer.

The secretary was instructed to cast the vote of the Club for the election of Mr. Butler to membership.

The following scientific program was presented :

Winifred J. Robinson: Demonstration of regeneration in *Drosera*.

Miss Robinson observed regeneration in the leaves of plants of *Drosera rotundifolia* which she had under observation for experi-

mental purposes, at the propagating house of the New York Botanical Garden, in August, 1907. Young plants appeared upon old and apparently dead leaves, which were attached to the plant and were at first thought to be seedlings that had penetrated the leaf-tissue in their growth. Sections showed that this was not the case, but that the young plant grew from the cells of the old tissue, which had remained in an embryonic condition. No formation of callus was observed. Regeneration occurred with equal facility from blade or petiole of the leaf or from the flower-stalk. The first leaves of the young plant bear no tentacles, but later leaves are exactly like those of the parent plant. The roots appear after the stem has attained some size and are at first diageotropic but later bend toward the substratum.

Drosera is not mentioned in recent literature upon regeneration, but Spencer, in his "Principles of Biology," 1867, referred to the subject as a matter of common knowledge. Naudin recorded the appearance of a bud upon the upper surface of the leaf of *D. intermedia* in Ann. Sci. Nat. II. 14: 14. *pl. 1. fig. 6.* 1840. Planchon gave his observations upon certain "monstrous flowers" of *D. intermedia* in Ann. Sci. Nat. III. 9: 86. *pl. 5 & 6.* 1853. His observations were verified by various later writers. The most extended study of regeneration in *D. rotundifolia* was made by Nitschke, professor at Westphalia, whose investigations were printed in the Bot. Zeit. 8: 237, 239, 245. 1860. He studied plants in the bogs and observed that the age of a plant could be determined by the successive rings of young plants about it.

Photographs of regenerating plants and of sections showing the relation of the regenerating tissue to the parent plant were shown, also specimens in alcohol, demonstrating the origin of young plants from petiole and blade of leaf and from the flower stalk.

Norman Taylor: Notes on *Tumboa* (*Welwitschia*).

After a short account of the history and synonymy of *Tumboa Bainesii* (*Welwitschia mirabilis*), a general description of the mature plant was given. Attention was called to the peculiar characters of *Tumboa*, which is exogenous in the two cotyledons and the 2-4-merous perianth, endogenous in the parallel-veined leaves

and six stamens, angiospermous in the general structure of the flower, and gymnospermous in the naked ovule and typical "cone" flowers.

Particular mention was made of the seedling, of which there are two now growing at the New York Botanical Garden. In germination the two ligulate cotyledons appear first above the soil, followed by the two nepionic leaves at first erroneously supposed to develop into the only two leaves that the plant ever has during the conjectural one hundred years of its life, but this interpretation of the foliage was subsequently corrected in the *Genera Plantarum*. Photographs were shown illustrating the two cotyledons and also the position and character of the two nepionic leaves. The latter, which will subsequently develop into the long, tentacle-like leaves of the mature plant, are at first small and linear, springing up directly between the cotyledons, which they closely resemble, and at right angles to them. It was noted that sometimes these leaves were pressed close together, and at other times spread as far apart as possible; that is, they were prostrated on each side of the axis of the plant. From being thus flattened out on the soil they would gradually become erect and finally touch their inner surfaces together. In seeking an explanation of this peculiarity several ideas suggested themselves, the true one seeming to be that the movement of the leaves was a direct response to the presence or absence of water. When they were prostrate they were simply wilted, and it was the water that made them stand erect. On account of the typically xerophytic aspect of even these seedling leaves one would not suspect that they were wilted, there being no external evidence of any loss of turgidity, except the change of position above described.

E. L. Morris: Some recent species of *Plantago*.

Plantago is the genus of plants containing our common plantain. Probably these plants are by most people considered nothing more than weeds, but in contrast to these as weeds, there is a large group of species typically at home and indigenous in the semi-arid regions of our West and Southwest. The species were for a long time included under one name, a name which was applied originally to the South American species found only in Patagonia.

The speaker called attention to a series of sheets of some fifteen species, which he stated, were, until 1900, or a few years preceding, classified under the name of *Plantago patagonica* Jacquin, or to speak more definitely, since 1845 there had been but three specific segregations from this composite and decidedly variant group. One of these was described by Dr. J. K. Small, another by Miss A. M. Cunningham, and another by Dr. E. L. Greene. The misapplication of the name of Miss Cunningham's species to a specimen received in exchange led to the study of the group and the segregation of the species into two distinct types, those with relatively long and definitely acute bracts, in distinction from those with typically short and definitely obtuse or rounded bracts. Among the group of perennial species of the genus, reference was made to a species from Mt. Shasta, formerly included in a species typical of only the extreme Southwest. Reference was then made to a recent species from Alaska, characterized by the marked septation or partitioning of the leaf hairs. A most notable fact regarding this species is that the next important collection of it was made in Montana. It appears that no collections of this species have been made along the Rocky Mountain regions between the Yukon and Montana stations. The last group of species noticed was that belonging to the typical South American subgenus *Plantaginella*, represented there by several species. A species recently reported from Mexico belongs unquestionably to this group, though quite out of its formerly known range. The chief characteristic of this species is the uniflorate spike, which, preceding anthesis, is enclosed within a prominent sheathing bract. Then followed a brief discussion of variation in our common eastern species, the facts being noted that certain forms may soon require a segregation with the rank of species.

A brief discussion followed the presentation of each of the topics of the evening.

Adjournment was at 9:45 o'clock.

WINIFRED J. ROBINSON,
Secretary pro tem.